UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

MAY 27 1992

OFFICE OF
PESTICIDES AND TOXIC
SUBSTANCES

MEMORANDUM

SUBJECT: FRAMEWORK FOR INDOOR AIR MONITORING STUDY FOR METHYL BROMIDE

TO: Penelope Fenner-Crisp, Ph.D., Director
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THRU: John Tice, Acting Head
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OREB has evaluated preliminary air monitoring data provided by California Environmental Protection Agency (CALEPA) from 7 homes treated with methyl bromide. These data were collected from various sites in the homes and the numbers of replicates were not consistent, only 1 house was sampled for more than 3 days. While these data indicate that the extended aeration (72 hours) may reduce air levels to acceptable concentrations, these data are insufficient to reach a decision. A copy of the review is attached. It is OREBs understanding that data are being collected by registrants/CALEPA (approximately 29 homes?) at this time. OREB has not yet received the results of any such monitoring. These data may support the 72 hour aeration period as required by the new labels but the information must be reviewed by OREB prior to drawing such a conclusion. In lieu of these data, or if they prove to be insufficient, OREB has drafted a framework for an indoor air monitoring study for this fumigant. If California data indicate that an acceptable level can be reached in all homes, no additional data will be necessary.

As a practical matter, the PCO will not be able to monitor methyl bromide concentrations at levels low enough to be deemed acceptable. Therefore, a predictive method must be used. OREB proposes that, if such a study is necessary, a statistically

derived regression model be developed. The basic assumptions of this framework are presented below:

1) A home will behave basically as a chamber, albeit a poorly controlled one. Under the same aeration conditions, a house will aerate with essentially the same pattern.

2) Following closure of the house, some off gassing of residual material from pockets or porous materials will occur. This would be expected to decrease as the residual pool diminishes.

3) As these "peaks" resulting from off gassing diminish they should yield a function that can be mathematically extrapolated to predict at what time an acceptable level would occur.

4) OREB believes that this would be essentially a Model II regression analysis (statisticians should be consulted to confirm the theoretical validity of this assumption). Model II regressions are those in which both X and Y axes are measured with error and are not under the control of the investigator. Acceptable range of "X" values (Days, hours) will have confidence limits. Due to this uncertainty, the upper confidence limit should probably be used to establish a safe reentry period (level of confidence to be determined).

5) The number of homes to be tested will be a compromise between statistical power and practical considerations (cost, time, available homes, etc.).

6) The type of structure and the different rooms of the house must be considered. A house profile, monitoring several rooms in the house should be conducted with special attention paid to basements, bathrooms, and attics. These considerations are the result of a monitoring study conducted by DOW Chemical Company. The termiticide monitoring data collected several years ago also indicated that air concentrations are similar in the first floor of homes but much higher in basement areas. The argument may be made that basement homes are seldom treated in the geographical locations where methyl bromide is used, but the potentially unsafe levels in these rooms should be addressed.

Efforts to design a complete study should be postponed until data from California are received and evaluated. In addition, the raw data from the DOW study should be obtained and analyzed, previous reviews relied on summaries only and need to be confirmed. OREB is in the process of reevaluating the previous submission (DOW study). The previous review contains no evaluation of methyl bromide concentrations and lacks sufficient detail to allow trend

analysis for either methyl bromide or sulfuryl fluoride. The reevaluation will be sent to SACB as soon as it is completed.

Attachment (1)

cc: D. Jaquith/OREB (H7509C) w/Attachment
L. Kutney/SACB (H7509C) w/Attachment
K. Baetcke/TOX I (H7509C) w/Attachment
Methyl Bromide file w/Attachment
Correspondence file w/Attachment
P. Perrault/OREB (H7509C) w/Attachment